



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1958

A NON-PROFIT AMATEUR TECHNICAL ORGANIZATION DEDICATED
TO THE ADVANCEMENT OF COMMUNICATIONS ABOVE 1000 MC.

W6IFE Newsletter

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At the **3 October** 2002 meeting of the SBMS will be a 24 GHz testing and equipment review. Bring your rig and get it tested. We will have the mixer kits for the 24 GHz project, thanks to Dave and Ken. Next up is the PIC board and parts. The SBMS meets at the American Legion Hall 1024 Main Street (south of the 91 freeway) in Corona, CA at 1900 hours local time on the first Thursday of each month. Check out the SBMS web site at <http://www.ham-radio.com/sbms/>.

Prez sez: Well, the contest is done and finished. What an experience! Thanks to everyone who participated and pushing on when things went wrong. It all contributed to a great weekend for everyone. Hopefully at the meeting we can compare scores and share stories. (See below) Thanks especially to the crew who went down to Mexico to operate. Great job. This Month's Meeting: We will have the usual construction round table followed by a round table on how the contest went. We will have a VGA projector and computer, so bring your pictures on CD ROM to share. You can also bring print pictures as well (label them on the back) Rumor says that there will be a unique presentation at the meeting that you will want to be there for. (A mystery Guest?) We will also have a discussion of 24GHz modifications for Celeretek and Land Mine radios with some examples available.

Last meeting: Welcome to new members Ed Aguilera, KF6VJC of Yorba Linda; David Peters, KI6FF of Westminster; John Jaminet, W3HMS of Mechanicsburg PA. Welcome to visitor Rafe Husa of Corona. 26 people present.

24 GHz Pcom comments-

Hello Microwavers-Those who attended the Sept. 5th meeting of SBMS know that the distribution of parts kits has begun for the K6VLM designed 3 GHz U/D Converter pcb that will be part of the Pcom 23 GHz

mods to 24 GHz. Kudos to Dave, WA6CGR, Ken WB6DTA and Steve AD6HT who assembled 28 of the parts kits during the meeting. I understand there will be more available next month. There were insufficient copies of the documentation at the meeting so I have posted scanned copies of the two layout drawings on the web. The schematic resisted my scanning attempts due to very tiny component labels. I have redrawn the schematic and it, as well as a parts list are also included on the web. If you find any errors, please let me know. Beware if you are still referring to K6VLM's original schematic and parts list published earlier in the SBMS Newsletter and also on the web. There are some subtle differences in the schematic of the current PCB and in the parts numbers and values. These were done to accommodate the different mixer used in the kits. I believe that a full set of documentation will be prepared for the Pcom mods in the near future. In the meantime these drawings should be helpful. To access the documents on the web, go to the following website: <http://www.ham-raiiio.com/sbms/sd/> then select "Technical Articles and Projects". Finally, select "P-com 23 GHz modifications to 24 GHz". 73s from Ed Munn, W6OYJ (858) 453-4563

Contest Comments:

K6JEY Group Report: Dennis, WA6NIA, K6JEY and KB6QHP went out again starting at Signal Hill with 24n and 10ghz n rigs. Enjoyed working the crew from there, San Pedro and off to the coast. Our only other good stop was Ventura. Where we worked Mexico and Robin on a bounce from somewhere. Love those bounces. We pushed on to Lompoc and spent the night. The next day went to Goleta as it was the first clear spot and worked quite a few. We then went all the way back to Signal Hill and Pt. Fermin. Dennis pushed on and finished at about midnight down near San Clemente. All of us had very good scores considering the number of stops and conditions. High spots: working Mexico with full-scale signals and working so many stations off of distant bounces. Too bad we don't get extra points for the extra mileage. Many thanks to our logger, navigator and historian Scott, who came out from Minneapolis just to be with us on the contest. Sure makes it easier. I assume I get the QLF award for jumping in on other contacts. I tried to do better the second weekend. -= Doug K6JEY

Hi all, here is my score for the completed contest - my personal best! :o) 49 - Unique call signs

180 - QSO's Best DX - 1100 km!! Total Score - 40,321 Thanks to everyone for an exciting contest!

Dave - WA6CGR

Chuck (WB6IGP) and I made a 4-mile (DM12LT to DM12 MS) laser communicator contact last evening just for fun as part of the annual ARRL 10 GHz and up contest. Chuck set up his unit in my back yard and I drove to Cowles Mt. about 4 miles away and hiked maybe 20 minutes until we could see each other. We used flashlights to initially locate each other and then zeroed in the lasers using audio feedback over 2 meter handi-talkies. Probably the biggest issue we found is that the rifle scope cross hairs are not

lighted and cannot be seen against a black background at night. We're running FM on our laser communicators so once everything is aligned it sounds just like coming over the liaison radio except full duplex. Initial alignment is always a real issue before starting operation especially if things have been banged around during contest travel. The contact this year was done in a bit too much of a hurry but next year we'll do alignment of the receiver, laser and scope optics after we set up on both ends before making contact. If there are any suggestions for lighting the scope cross hairs, we'd be interested in hearing them. We're using laser pointers with about X7 beam expanders and 4" receive optics.73 - Kerry N6IZW &endash;

Well the second weekend was better for the number of QSOs (56, 17 calls) but the DX was down to 6310 km at 11 locations. I got to use 24 GHz wide band for a distance of 132 KM to Mel, WA6JBD off Frazier Mtn. Over both weekends I had 98 QSOs with 32 unique calls and 16,159 km from 16 locations. Not too bad from hearing about all the broken rigs and poor conditions at times. A big thank you to the guys who ventured to Mexico and put up with broken stuff from pounding over the roads. Bill, WA6QYR

Scheduling.

October 24-27 - Microwave Update 2002/Eastern VHF-UHF combined Conference sponsored by N.E.W.S.

November 7 WA6JBD program on Network Analyzers.

December 5 5.7 GHz gear report and testing.

Wants and Gots for Sale

Wanted- 48v 3A power supply John KJ6HZ 909-683-1434

Wanted –48v 3A power supply Pat N6RMJ 661-264-1978 n6rjm@direcway.com

Activity reported at the 5 September meeting-Dennis, WA6NIA had fun roving during the contest and went to Howard Shafter Engineering to pick up on equipment sale; Mel, WA6JBD roved the SJV and made 612 mile shot to Mexico; Chuck, WA6EXV had poor luck in the contest and is working on assembly of 24 GHz narrowband rig that should have 3 dB NF and 1 w out put; Bill, WA6QYR had fun roving and has been working on 24 GHz narrow band rig and a light communicator rig; Gary, W6VRC has a new shack; Ken, WB6DTA built two new 10 GHz rigs for friends and has been kitting the 3 GHz Pcom mixers and will be to Mexico next time; Rick, W6ESS worked on his 10 GHz box; John, N6AX had 10 and 24 GHz rigs to show and tell; John, KJ6HZ rebuilt rig day before contest with bad result on Saturday and better on Sunday; Dick, WB6DNX had fun on Signal Hill; Kurt K6RRA will be to signal hill; Ed, K6EC had 20 contacts and 15 stations; Pat, N6RJM had fun in contest working from Corona and Desert; Chuck, N6EQ had fun in contest; Glenn, KE6HPZ roved to 9 locations working Mexico; Jeff, KN6VR still moving; Ed, W6OYJ worked 10 grids from Frazier Mtn and has rig with right side up LO to make IF radio read right; Larry, K6HLH had fun out in contest and will have a 25 w TWT next year; Mike, XE2/W6YLZ paid \$100 for Mexico license and told us about his adventures to Mexico with 60 some contacts and contacts that ranged from 726 to 1100 km; Chip, N6CA is cleaning out 20 yr old stuff and has a new mill and power meter; Dave, WA6CGR found Reyes Point north of San Francisco not so good, lots of endless roads and problems working around northern CA.

Off the web-

On September 7, 2002 at 1235UTC, WW2R/5 and W5LUA made a record breaking contact on 24192 MHz. Dave was operating portable in EM41HC near Natchez, Miss and W5LUA was operating from his home in EM13QC, Allen, Texas. CW signals of 549 were exchanged.

The equipment at WW2R/5 consisted of a 2 ft dish fed through 2' of flexible waveguide by a retuned Hughes 12-18GHz TWT running 11W output. The 1.8dB HEMT preamplifier was mounted directly on the waveguide switch. The homemade transverter fed an IC402 at 435MHz. Frequency calibration was achieved by a frequency counter locked to GPS by an HP Z3801A time/frequency standard. Signals on 10GHz were consistently around 10dB above the noise. After the QSY to 24GHz, and overcoming the surprise of hearing anything, initial signals were estimated at around 6dB above the noise but by the end of the QSO were barely audible above the noise.

The equipment at W5LUA consisted of a 2 ft MACOM dish with azimuth and elevation control at 65ft. LNA noise figure at the dish measured 3 dB. I was using an Alelco TWT producing 50 watts in the shack. The actual power getting to the dish was considerably less. I had two 1.5 dB loss WR-42 flexible pieces of waveguide in the shack feeding about 60 ft of EW-180 waveguide with about 4 dB loss and another 1.5 dB loss WR-42 flexible jumper at the antenna. The transmit losses add up to 8.5 dB giving me about 7 watts at the feed. My azimuth

rotator is an Orion 2800, which allows me to get to within tenths of a degree. I use a small actuator to give me about -1 to +16 degrees elevation control. This worked OK for horizon shots for AO-40. We first tried 10 GHz where signals were 5 to 10 dB over the noise. We made an easy contact and then QSYed to 24 GHz where I was much surprised to hear Dave about 10 to 15 dB over the noise on a nice peak. The initial peak may have been due to airplane

scatter but afterwards the signals became more constant, they settled in about 10 dB over the noise for several minutes and an easy QSO resulted.

Based on 6 digit grid square to 6 digit grid square EM13QC to EM41HC DX = 337.3 miles or 542.8km.

Based on actual latitude/longitude locations, the DX calculates to be 338.2 miles or 544.3 km establishing a new world record on 24192 MHz.

W5LUA 33 deg 6 min 53 sec north by 96 deg 36 min 54 sec west WW2R/5 (from map) 31 deg 7 min 22 sec north by 91 deg 20 min 33 sec west

Weather at EM41HC was 75 degrees F and 88% relative humidity with relatively clear skies with some high clouds. Weather at EM13QC was 72 degrees F and 70% relative humidity with skies partly cloudy.

Attempts to repeat the contact over the same path 12 hours after the initial QSO resulted in no signals being identifiable either way on 10GHz, suggesting the morning QSO was under enhanced tropo conditions. No signals were heard on 2 meters or 70 cm at the time of the contact. The sked was setup earlier in the week via email with no liaison on any band including cellular! Numerous attempts over a slightly shorter TX-MS path on 10GHz in July also resulted in no signals being identified.

Submitted by W5LUA and WW2R on September 9, 2002

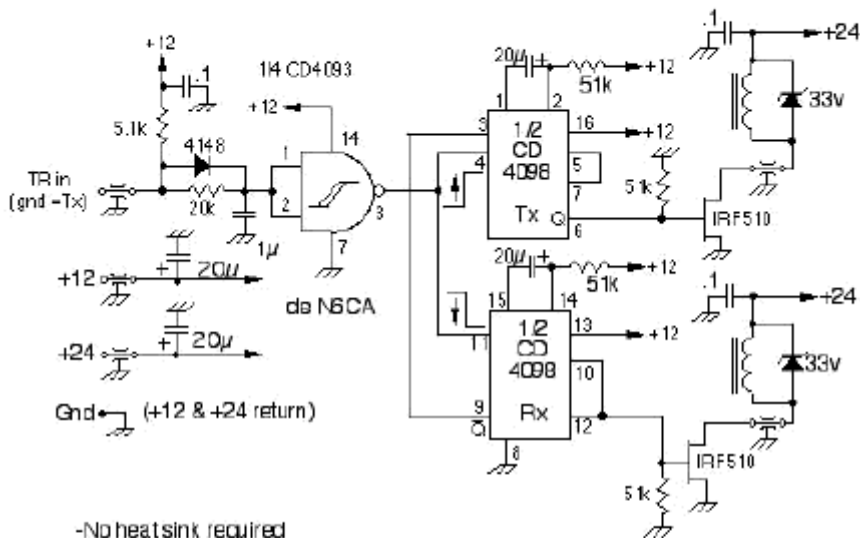
Hola Finally got the wave-guide relay driver running and it works great.

See: http://www.ham-radio.com/n6ca/microwave/rlydvr/wg_rlydvr.html

73 Chip N6CA

Latching Waveguide/coaxial Relay Driver

deN6CA, August 09, 2012



- No heatsink required
- coil drive pulse width set at 100 ms
- most 23v relays will drive ok at 24 v
- 33v zeners eliminate positive (>33V) spikes and negative spikes from coils
- resistors 1/4 watt

The CD4093 and its input shaping circuit eliminate possible contact bounce and the potential for multiple trigger problems from relays etc. Latching relays usually require only a pulse to activate them. 100 ms pulse width seems to be adequate to drive most relays. The dual one shot CD4098 provides the transmit pulse on the leading edge of the TR command; the second half provides the trailing edge triggered pulse to drive the relay back to receive. To assure both coils are not simultaneously driven the Q output of the Rx one shot drives the reset pin of the Tx section.

deN6CA

One of the 50 MHz and up groups dish on a tall pole at Frazier Mtn during the September pat of the contest. It helped to get higher than some of the trees, but remote control of the rig—hummm? Photo WA6QYR (below)



More of the 50 MHz and Up group on Frazier. This was a pair of off set feed dishes on a pick up truck bed. KR7O with Paul of SBMS N6LL on left. Photo WA6QYR (below)



Gorn, AD6IW was the high power guy with 15 w on 10 GHz. Another member of the 50 MHz and Up group on Frazier. He was in the old fire look out. Photo WA6QYR (below)



WA6QYR set up at the Marine Exchange over looking the Korean Bell in San Pedro during the august part of the contest. This place had a great look out over the water and could see most of 360 degrees. (below)



Some photos from Greg, K6QPV of the San Diego Microwave Group. Here Kerry, N6IZW and Ed, W6OYJ are on Mt. Soledad in the fog trying to work the contest. (below)



Ed, W6OYJ trying to warm the old body up with some coffee while in the fog on Mt. Soledad, San Diego, CA. 30 some inch dish with couple hundred milliwatts got him to the stations in Mexico and numbers of other one around the southern part of the state. (below)



One of the Northern California 50 MHz and Up group on Frazier Mtn during the September half of the contest with his 10 GHz rig. Photo by WA6QYR (below)



With HT in hand, Trustee Ed Munn, W6OYJ of the SBMS, was photographed last Saturday morning in prayer while kneeling towards the Mecca of Microwaves. When challenged, he refused to divulge the frequency used during his moment of inspirational guidance.(below)



Actually he was trying to protect his HT from high RF levels coming from the TV transmitters just a short distance away from the San Diego Mt. Soledad site where they operated during the contest. Photo by Greg, K6QPV.

The San Bernardino Microwave Society is a technical amateur radio club affiliated with the ARRL having a membership of over 90 amateurs from Hawaii and Alaska to the east coast. Dues are \$15 per year which includes a badge and monthly newsletter. Your mail label indicates your call followed by when your dues are due. Dues can be sent to the treasurer as listed under the banner on the front page. If you have material you would like in the newsletter please send it to Bill WA6QYR at 247 Rebel Road Ridgecrest, CA 93555,

bburns@ridgecrest.ca.us, or phone 760-375-8566. The newsletter is generated about the 15th of the month and put into the mail at least the week prior to the meeting. This is your newsletter. SBMS Newsletter material can be copied as long as SBMS is identified as source.

San Bernardino Microwave Society newsletter

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USA